Meeting Minutes

for the 7th experts meeting of IHRA pedestrian protection
25-28 Sept., CCFA, Paris, France

Day 1 (Mon. 25 Sept) CCFA

1. Opening of the meeting

The chairperson, Mr. Mizuno opened the meeting at 10:00 and thanked Ms. Brun-Cassan for making the necessary arrangements for the meeting. Mizuno implored the experts greatly extend their active participation and positive contributions in promoting this project, citing considerable delays in meeting the original schedule.

2. Roll call of delegates

(See attached sheet Appendix 2)

3. Adoption of meeting agenda

The draft agenda was approved without change.

4. Approval of draft minutes from the 5th Meeting

The minutes (Rev. 2) (Doc. IHRA/PS/156) were approved with only the following revision of a single sentence in Item 10 Leg:
Mr. Janssen reiterated his opinion that the weight of the dummy head mass is not so important, but that it is crucial to determine the effective mass from consolidated data derived from the cadaver test, dummy test, and simulation studies.

5. Special Status Report to the IHRA Steering Committee

As a follow up to *conclusion 1* reached at the last meeting, Mr. Mizuno presented a special status report to the IHRA steering committee proposing that the work be continued after ESV 2001. (Doc. IHRA/PS/148C)

6. Final results on shape of vehicle front

Mr. Ishikawa summarized configuration charts for the latest model Japanese cars classified into "Sedan", "SUV", and "One-Box" categories, defining vehicle fronts with details on dimensions and angles. He created corridors based on Japanese car models that encompass the entire configuration and included charts for several
European models between the upper and lower lines. (Doc. IHRA/PS/152, 153)
No US data was available, and members expressed their desire that the US delegate submit charts of US models by the next meeting at the latest.
Mr. Bilkhu of the US presented configuration charts for a few models of MPV+SUV

+Truck (Pick-up) from Chrysler, and committed himself to submit charts from GM and Ford by the next meeting.

Mr. McLean sounded out Mr. Ishikawa on the possibility of creating an additional corridor for below the bumper, especially for "Sedan + Light vehicle + Sports types", because the frontal sections below the bumper may have some relevance to lower leg injuries.
Mr. Ishikawa replied that he will establish a corridor targeting the area below the bumper.

CONCLUSION 1 (Action)
Mr. Ishikawa will create a corridor for the area below the bumper by the next meeting.

7. Accident study results based on unified format
Mr. Janssen reported that he forwarded to Mr. Saul data on 783 accident cases received from BASt, which was collected by Mr. Oette during the years 1985-1998.
Mr. Saul consolidated the data from the U.S., Japan and Europe to present global accident data in a unified format, from which he completed a comparative study to identify trends in the corresponding countries. (Doc. IHRA/PS/160-1,160-2)
As a result of analyzing data from 1532 cases from the three global regions, some differences in injury source and injury region were noted, and a correlation between impact velocity and AIS was clearly shown. Further, high AIS injury rates seem to generally increase with age.

Members offered the following notable comments:
- A key concern with regard to "Global impact velocity for AIS levels" is a rationale behind their decision on the level of the cumulative accident rate where the impact velocities correspond. The impact velocity is to be determined by accident studies, comparative analysis between impact velocity and computer simulated velocity, as well as feasibility requirements for the car.
- Consideration should be given to the US data on the basis of time collection, since accidents during week day working hours are represented in the US PCDS data, and weekend accidents, including those involving drunken drivers, are not included.
- Japanese and European data have no time limitations and are deemed appropriate and representative of accident situations for each area.
- Mr. Saul will try to have available by the next meeting a breakdown of overall data on leg injuries in a table entitled "Injury location by region". Remaining injuries may be included in the term (overall leg injuries), and a definition needs to be clarified.
- Additional analysis is needed on the speed distribution by injury sources and by injury levels.
- Australian data needs to be consolidated under a common format by the next

meeting.

CONCLUSION 2 (Action)

Mr. Saul will try to complete further injury distribution analyses in terms of injury levels with AIS2+, 3+, 4+ respectively, and speed distribution by injury sources and by injury levels.

CONCLUSION 3 (Action)

Mr. McLean will forward the Australian data to Mr. Saul by the next meeting.

8. Adult head

8.1 Computer simulation study results

Mr. Ishikawa introduced the latest simulation performed using a 50 percentile American male as a model at vehicle speeds of 30km, 40km, and 50km on the basis of data sets obtained from vehicle shape studies on 27 car models (nine cases each for Sedan, SUV, and One-Box categories).

He reported that this simulation indicates head contact locations are primarily on the window for Sedans and One-Box vehicles, and on the bonnet for SUVs.

(Doc. IHRA/PS/162)

In addition to the 27 simulations, Mr. Ishikawa quoted 10 cases of PMHS test data showing bonnet contact, and 5 cases of window contact which he compared in terms of head impact speed and angle, and he calculated averages for simulation and PMHS data for reference values.

Members questioned Mr. Ishikawa about what happened in the 3 cases where there was no head contact on the bonnet of SUV, and if that data represents a realistic orientation in the simulation.

Mr. Ishikawa answered that these cases are typical pedestrian kinematics for a child dummy, and that in some cases the shoulder protects the head from direct contact against the bonnet. In cases where the bonnet leading edge is relatively high, contact force may prevent direct head contact. He stated that no head contact is likely to occur in an actual accident.

CONCLUSION 4 (Action)

Mr. Ishikawa will try to further investigate the reason why the head does not come into direct contact with the bonnet.

Following up on his presentation on modeling activities at the last Washington meeting, Mr. Saul obtained an MADYMO Draft Manual and conducted 18 simulations based on the data sets, since TNO recently improved the 50 percentile pedestrian model. The MADYMO reconstruction study consists of two parts, vehicle shape profile classification, and reconstruction of a few PCDS cases. Mr. Saul expressed his opinion that this is a reasonable pedestrian model based on validation by experimental data

with PCDS released by Mr. Ishikawa.
(Doc. IHRA/PS/160-1,160-2)

8.2 Basic concept of test procedure
Mr. Sasaki commented that he reviewed and amended the correlation of vehicle velocity vs. head contact velocity (Doc. IHRA/PS/113R2 Annex B), taking into account the results of the last ISO meeting, and that he will make a detailed report of the revised draft under the article "Test procedure".

Mr. Janssen stated that some areas of contention in the last meeting were not noted in the Draft. (Doc. IHRA/PS/113R2)
He also questioned the definition used for an adult, citing the EEVC Draft which defines an adult as 1500mm or more in terms of WAD on bonnet and a child as less than 1500mm. He pointed out the lack of a clear definition in this Draft.

In response, Mr. Ishikawa introduced WAD data for adult and child including accident data covering all speed ranges recently released by ITARDA. He added that according to this data a child less than 16 years old, falls within the WAD less than 1500mm, while an adult 16 years old and up is within the WAD over 1500mm. Accident data could be divided into two groups, adult and child, in terms of age and WAD, and age is closely tied to the WAD.
A lengthy discussion centered on the justification and rationale behind supporting the close relation between age and WAD.

The Mizuno's suggestion that an adult and a child could be distinguished by age was not supported because it was assumed that such a definition would be inaccurate.

Mr. Lawrence suggested appending the term "typical" to the age group, stating that the age group whose WAD is less than 1500mm will be typically under 16 years old. The members agreed with his suggestion.

CONCLUSION 5 (Action)
Mr. Lawrence will, at the next meeting provide a definition for adult and child using the term "typical".

Members went through the document (Doc. IHRA/PS/113R2) item by item, and the following problems were pointed out:
- 3.7 Impact point
It needs to be illustrated in Figure 4 that the head impactor contacts on the bonnet at impact point B.
- 5.4 Propulsion of headform impactor
The last paragraph is amended to read; "should be launched to strike the vehicle at a

required velocity".
- 8.11 Headform impactor data
"the accuracy of velocity measurement±0.1m/sec" is amended to read; “the accuracy of velocity measurement ±0.01m/sec”.
- Annex: A 3.2
Change to 600 square mm.
- Annex: B
Requires further discussion since the distribution/ratio between the velocity of head impact and vehicle impact is subject to change depending on the car shape (Sedan/SUV/One-Box).

8.3 Vehicle feasibility related to vehicle crash speed for test
Mr. Sasaki submitted a proposal regarding vehicle impact speed since an agreement reached at the last proceedings required the manufacturers to propose a vehicle impact speed appropriate to car feasibility. (Doc. IHRA/PS/174)
Mr. Sasaki stated in his proposal that the boundary between the bonnet and fender cannot fully absorb the energy on the assumption that the form of the energy absorption wave for the impactor is rectangular. He also pointed out the necessity to assure durability for the bonnet hinge, adding his opinion that 35km/h is a realistic head impact velocity for an adult head, and 30km/h for a child head, including some consideration for mitigation and exemptions.

In this connection, Mr. Janssen commented that it is hard to argue the matter, saying that while today's technologies should make realization of these requirements feasible, manufacturers continue to insist that it is difficult. However Mr. Janssen seemed to gain a better appreciation of car feasibility using modern technology after hearing that TNO is assembling a car which will meet EEVC requirements and is due to be exhibited in February. Mr. Janssen emphasized that manufacturers should step up their efforts for improvement by implementing the most advanced technology.

When questioned about the dynamic bonnet, Mr. Sasaki reported that they had investigated this matter in the past and found that it was of no practical use.

Mr. Bilkhu said that the any extreme design change would be difficult considering US consumer tastes, and that a 5mm tolerance is an actual limit supposing the present design.

Mr. Lawrence and Mr. McLean emphasized that manufacturers have to make an all-out effort toward improvement and to meet the requirements in view of pedestrian protection, resolving possible conflicts, adding that the members participate in this committee in order that these needs might be realized.

Day 2 (Tues. 26 Sept) CCFA

Continuing with the ongoing item, vehicle feasibility related to vehicle crash speed for tests, Mr. Provensal from ACEA briefly outlined his recognition of vehicle feasibility in ACEA.
Since ACEA has basically agreed to a vehicle to pedestrian impact velocity of 40km/h as proposed by EEVC/WG17, they have been looking into feasibility problems.
ACEA has been investigating designs to meet the requirements taking into account the durability of the curl top, hinge, and latch, and the stiffness of the bonnet, with the conclusion that some modification of the requirements will be needed.
He pointed out the problem of energy dissipation requirements for adult head and child head tests assuming current available technology. Although they have investigated the concept of an overlapping zone on the bonnet for both adult and child, they found that there was no way to comply with this requirement without securing a 150mm clearance under bonnet. He indicated that they still have a feasibility problem with the front bumper, and that are presently not sure they can achieve an impact speed of 35km/h, assuming "currently available technology".

In this context, Mr. Mizuno stated that our task is to recommend a reasonable test procedure, adding a remark in which he suggested the Japanese Government was more concerned with the need “not to kill industry".
His remarks drew heated response from other members.

Mr. Lawrence criticized Mr. Mizuno for his expression often referring to the "killing industry", and indicated that securing a 150mm clearance should not be such a great problem, and that it seemed to be more of a political decision.
He said that it isn't worth participating in this committee, if the working group can't propose test procedures that exceed the draft made by EEVC/WG17.
Mr. McLean also emphasized that there can be no advancement, if we make the test procedures merely based on currently available technology.
Mr. Janssen stated that our mandate is not to make regulations but to propose harmonized test procedures on the basis of the latest knowledge and accident data.
He said we had agreed that our duty was to provide the higher-level committee with the background such as speed, injury criteria, threshold, injury risk and the like for their judgement.

The meeting became entangled and Mr. Mizuno shelved this argument (car feasibility) for the time being.

8.4 Test tool
- ISO’s head mass & etc.

Mr. Mizuno reported that he forwarded the data about ISO head mass that was his

mandate concluded at the last meeting. (Doc. IHRA/PS/150)

- Effective head mass

Mr. Ishikawa made a presentation about effective mass at the time of a collision.
He indicated that there was tendency different from the result of effective mass introduced by Mr. Janssen, and that the definition on effective mass is needed in order to discuss about the head mass. He introduced the result of computer simulation conducted by JARI using 4 kinds of head masses as compared with data Mr. Janssen introduced at the last meeting as follows:
1) Effective head mass is greatly affected by the impact conditions, such as vehicle shape and stiffness.
2) An average value of effective head mass gets to the result near head mass itself.

Mr. Janssen stated that the need for a definition depends on the conditions, and that it would be decided following judgement of whether a computer model is applied. The easiest approach would be to use a static mass of a dummy. From an engineering viewpoint, the lowest or the highest mass should be chosen. In that case a definition is not needed.

Mr. Lawrence raised a question regarding adoption of an average value for the effective head mass, and proposed the static mass for the worst case.
Mr. McLean said that if anything, he favored the proposal previous offered by Mr. Ishikawa.

Mr. Janssen suggested that Mr. Ishikawa further work out the effective mass concerning the said car shape study of 27 cases to identify the variations, based on his definition with the time window, assuming 4.5kg for the head mass.
Members agreed that they decide the effective mass (4.5kg or else) subject to review of Ishikawa's additional computer simulations.

CONCLUSION 6 (Action)

Mr. Ishikawa will conduct a parameter study based on the 27 car shapes that he introduced so as to enable us to see the variations in effective mass.

CONCLUSION 7 (Action)

Mr. McLean will forward additional simulation studies to Mr. Ishikawa by the next meeting.

- Moment of inertia for 4.5kg head mass

Mr. Saul calculated the difference in moment of inertia for both headforms (4.8kg and 4.5kg), and showed that there was no major difference between the two headforms. (Doc. IHRA/PS/169)

Mr. Saul also introduced a resonance problem discovered by Endevco in processing the child headform test.
He said that the undamped accelerometer Endevco 7267a caused resonance that affects the HIC value in the 14kHz frequency zone, while the damped Entran EGE 3-73 which has a resonance zone around 25kHz showed minor distribution with little influence on the HIC value.
He reported that Entran EGE 3-73 is reasonable since its frequency response, capabilities, and sensibilities are better. (Doc. IHRA/PS/168)

Mr. Janssen contacted FTSS Europe and reported the following information concerning headform impactors:
The first delivery of the order is scheduled for the end of October. A certification corridor has been set up for the child headform based on the 1st series of skin, while for the adult, a new series of skin, not the 1st skin, is now being tested to set up a certification corridor.
He reported that SAE/WG considered the damped accelerometer, but reached a negative conclusion due not only to its influence on acceleration but also initial data.

CONCLUSION 8 (Action)
Mr. Mizuno will incorporate into Doc. IHRA/PS/110 and circulate the below listed items and data on the updated TNO 1 and TNO 2, which will be forwarded from Mr. Janssen.

Additional items moment of inertia,
center of gravity,
location of accelerometer,
seismic mass location tolerance
assembly resonant frequency

Mr. Janssen introduced a document (Doc. IHRA/PS/161) which describes topics and parameters of impactors and test procedures. Mr. Sasaki will review and improve this draft referencing the document.

Mr. McLean suggested that WG needs to investigate which impactor (with skin/ without skin) should be used.

Mr. Ishikawa said that HIC values arising from both impactors are similar at a level of around HIC 1000, a difference appears for higher HIC levels. He added that even if the difference was not revealed in the impact test at 90 degrees, the problem of a slide might come out at 40 or 50 degrees.

CONCLUSION 9 (Action)
Members shall do a comparison study to determine differences between impactors

with and without skin. Mr. Ishikawa will investigate the data reported at previous ISO meetings.

8.5 Test procedures

- Wrap around distance (WAD)

Mr. Sasaki proposed 2100mm as a maximum WAD making use of data based on the EEVC proposal, JARI simulations, and ISO arguments and data. He avoided making any clear reply about minimum values.

Mr. Ishikawa commented that the data was gathered from the results of accident studies conducted when BASt developed headform impact tests for bonnets, and that they include speeds up to around 40km/h or less than 50km/h. (excluding 50km or more)

Mr. Ishikawa added that the WAD value range of 150 to 210 cm for adult Japanese equals -1.18σ to 1.17σ in terms of WAD and statue ratio, referencing the ISO document (WG2 N520).

There is no proposal or data regarding WAD from any other country. Members will discuss WAD when the US presents its data analysis.

CONCLUSION 10 (Action)

Mr. Saul will break down the US PEDS data into the 40-50km/h category to show WAD data for the US.

- Definition of side reference line

(This item was postponed until the following day)

- Target point vs. Impact point

Although Mr. Saul proposed A as a target point and B as an impact point in Fig 4 of No.113R2, members failed to reach agreement and left the item for later discussion.

Day 3 (Wed. 27 Sept) CCFA

- Dynamic certification test

Mr. Janssen proposed requirements and test procedures for dynamic certification for the headform impactor inputting the documents. (Doc. IHRA/PS/161)

Members had an argument about the necessity for a certification test, evaluation of a simple drop test, and use of dynamic certification together with drop test. They then agreed with the Janssen's proposal based on the judgement that it is difficult to identify a vibration problem by a simple drop test alone, and it is desirable that it be close to the actual impact test.

Mr. Saul avoided making any clear reply about the proposed dynamic certification.

Mr. Lawrence submitted an assessment giving background and deciding in favor of the new dynamic certification test proposed by Mr. Janssen, as compared with the old drop certification test. (Doc. IHRA/PS/170)

- Proposed vehicle speed and head impactor speed

Mr. Janssen indicated that Mr. Ishikawa's report (Doc. IHRA/PS/127) is not a complete document, even though it contains some validation results conducted by computer simulation. (Doc. IHRA/PS/162)
He said that in order to compare other models, the report should be completed with a description of contents, i.e. the kind of models used, validation levels, vehicle stiffness, etc.

Mr. Janssen suggested that the work should not be divided among individual task group members (Mr. Ishikawa, Mr. Saul and Mr. McLean), and that it is desirable for the three of them to explore various approaches for conducting simulations on the basis of a unified format so that the members can compare the simulation results afterward.
Members agreed with his proposal.

CONCLUSION 11 (Action)
The simulation task group will share the information concerning format / items / parameters, and not allot portions of the work to each member, so as better explore each member's approach in assessing the simulations.

COMPUTER SIMULATIONS

(a) Compare input data afterwards
(b) Show validation levels for pedestrian models
(c) Start with the 50th percentile adult male

Mr. Janssen proposed a motion that the definition of WAD be clarified.
He further asked, when a pedestrian hits the windscreen, how the WAD should be measured from the bonnet leading edge to the contact point on the windscreen.
He pointed out two options, one, to go to the windscreen via the bonnet following the shape of the front contour, or to go directly to the contact point on the windscreen.
The former has been commonly used as the WAD without being specifically defined, since it was common for pedestrians to hit the bonnet following the contour of the bonnet. However, recently, there are more cases where pedestrians contact the windscreen. We need to have a clear understanding of what the values of the WAD actually represent.
Mr. Lawrence, Mr. McLean and Mr. Ishikawa supported the second option, while Mr. Saul supported the first.
Mr. Mizuno asked Mr. Saul for a rationale to support the first option, but then joined

the other members in ascribing to the second definition.

Mr. Sasaki proposed that head impact should be at a speed of 30km/h and at an angle of 70 degrees on the bonnet, and at 40km/h and at 50 degrees on the window. His proposal was placed under consideration for reference since the problem of average values has not yet been solved, and further his proposal is not deemed to be consistent with an agreement regarding a simulation consisting of separate categories for Sedan, SUV, and One-Box vehicles.

CONCLUSION 12

It was confirmed that the issues of vehicle speed, head impact speed, and head impact angle are to be determined by the following agreements.

<Car speed>
(1) Combine global data for AIS 2+, 3+, 4+(head) against car speed
<IMPACT CONDITIONS>
(1) At least 3 vehicle shape categories based on computer simulations
(2) Combination into a single set if appropriate
(3) Computer simulations included in procedures

CONCLUSION 13

Computer simulations should be started with a limited unit of 50 percentile male (HybridIIIstanding statue), and then elaborated on appropriately at a later date if need be.

8.6 Criteria and threshold

At the last meeting, Mr. Saul had reported that they have been considering the appropriateness of the existing maximum HIC time interval of 36msec, which has been proposed by the agency to evaluate the HIC over a maximum 15msec time interval with max. 700 (threshold) for adult dummies. (Doc. IHRA/PS 142)
Mr. Saul proposed a motion to request the recommendation from IHRA Bio WG, and the group agreed with his proposal.

CONCLUSION 14

Mr. Saul will contact the Bio WG to get the recommendation and rationale behind interval and threshold of HIC.

adult head – HIC35 = 1000
– HIC15 = 700 ?

- Definition of side reference line

(This item was postponed the previous day)

Mr. Provensal said that they support the definition of the side reference line proposed

by EEVC/WG17. He added that they are already complying with the proposal assuming the current line as a head impact area on the bonnet.
He suggested keeping the side reference line for the defined impact area on the bonnet to begin with, and then looking into the appropriate criteria to define the windscreen and windscreen frame test area as the next step.
Mr. Sasaki supported the side reference line at an angle of 45 degrees, however, he said more time was needed to comply with the peripheral area of the windscreen and A-pillar from the viewpoint of car feasibility.
Mr. Bilkhu avoided making any clear reply on this issue pending consultation with AAM.
Mr. McLean suggested that the angle should be at 60 degrees. Because they found that tests are often not conducted around the boundary of the bonnet and fender in spite of the fact that they are very rigid parts and accidents often result in pedestrians making contact with these points.
He further demanded that dashboards also be included, noting the occurence of fatal head injuries from pedestrians passing through the windscreen and striking the dashboard.
Mr. Saul approved of Mr. McLean's proposal, saying that the IHRA Draft: Adult head, stipulates "all the parts of the vehicle structure and components that may be involved in pedestrian head impact shall be in place in the test vehicle".

CONCLUSION 15

Definition of side reference line:
(1) For bonnet, keep as per EEVC-17
(2) Need new definition/procedure for windscreen and A-pillar
(3) ACEA, AAM, JAMA to propose windscreen and A-pillar procedure

9. Child head

9.1 Basic concept of T.P.
9.2 Vehicle feasibility related to vehicle crash speed for test/proposed vehicle speed, and head impactor speed / proposed head impactor angle

Mr. Sasaki briefly introduced the draft amendment. (Doc. IHRA/PS/118rev2)
He said that he revised the draft for the child head following the precedent draft for the adult head, and that he had revised Annex A and B taking into account the study results of the ISO meeting.

Mr. Lawrence asked Mr. Sasaki if there would be any additional simulation data, since the statue data varied so much in Annex B. He pointed out the problem of defining a child merely according to the age.
Mr. Janssen indicated that the variation of the vertical axis of Annex B must arise from a simulation using a different type of car shape.

Mr. Ishikawa reported that he combined the latest simulation results done by JARI with 6 cases from a VDA study by TNO with the following conditions:

Bumper Lead (BL): 100, 200mm
Bumper Center Height (BCH): 400mm
Bonnet Leading Edge Height (LEH): 600, 700, 800mm
Impact Velocity: 30,40,50km/h
Vehicle Stiffness: K3, TNO Study for VDA
Breaking: 0.5G

CONCLUSION 16

In order to clarify the variation process for a vertical axis (Head impact velocity), Mr. Saul will start by trying to simulate conditions for a 6 year-old child based on PEDS studies.

9.3 Test tools

Mr. Lawrence suggested that WG investigate a test method for a child model assuming the worst case, that is, including test method for 15 year-old too.
Mr. Ishikawa proposed a 6 year-old child with an average 3.5kg head mass, adding that 6 year-old children have encountered such an accident according to the accident data by age, and that a 6 year-old model was chosen at a previous IHRA Meeting.
A lengthy discussion centered on the justification, rationale supporting 6 year-old child.

Mr. Janssen suggested that WG take a pragmatic approach verifying the accident data, looking into the supporting data, or examining it by computer simulation, as they begin working with the 6 year-old model.
In this connection, Ms. Brun-Cassan suggested that WG classify accident data for children under 16 years old into AIS 2+, 3+, and 4+, in the same way Mr. Saul conducted an analysis with a Spread Sheet.
The members agreed to her suggestion.

CONCLUSION 17

WG will take up a 6 year-old model initially as a pragmatic approach, and will classify the accident data for children under 16 years old into AIS 2+, 3+, and 4+ for further investigation.
WG asks for a volunteer to analyze the database that Mr. Saul summarized.

- Head size

Mr. Lawrence indicated that there would be two options for designing a child headform impactor, assuming a 6 year-old child and with a head of an appropriate diameter.

One option is to use an adult head impactor, another is to scaled down an adult head impactor to the diameter for a child. He supported the latter option, saying it would be realistic to scale down using the same design.

Mr. Sasaki, however, proposed using the size as same as adult from the practical viewpoint, first making reference to the undermentioned data (1) 160.5mm and (2) 166.6mm, then round the figure to 165mm. (Doc. IHRA/PS/173)
(1) (141mm+180mm)/2=160.5mm recommendation by ISO/TC22/SC12/WG5
(2) 166.6mm by SAE Paper 973317

The members agreed with Mr. Sasaki's proposal.

Mr. Saul reported that the head mass of a 6 year-old child dummy of NHTSA Hybrid III was 3.5kg (7.66lbs). (diameter unknown) (Doc. IHRA/PS/172)

CONCLUSION 18
Members agreed on 3.5kg as the mass of a child impactor on the basis of head mass of Hybrid III 3.48kg(3.5kg), subject to review of the member's computer simulations.

Day 4 (Thurs. 28 Sept) CCFA

10. Leg
An explanation of the "Basic Concept of Test Procedure" was given and test procedures were proposed by Mr. Sasaki, based on the (Doc. IHRA/PS 119) .

11. Final Report to ESV Conference
Draft contents of the report submitted beforehand by the chairperson, draft assignments for each chapter and draft schedule were submitted, and these draft proposals were discussed at the meeting.
Mr. Janssen, in this connection, expressed the following viewpoints and the participants agreed to all of them.

(1) In addition to analysis of global accident data, analysis of data by country should be made.
(2) In each version, a matrix table should be drafted by degree of injury, by location of injury and by location of damages, so that priorities will be understood.
(3) Definitions of bumper and A pillar are also required.
(4) For collision speed, the percentage covered by AIS+2 must be indicated.

Agreement was reached on the report contents and assignments as indicated in attachment. (Doc. IHRA/PS 146R3)

It was agreed that at the end of each month, assigned experts should make a notice by e-mail to each member to report his/her progress so that the schedule can be expedited more securely.
The title shall be "IHRA/Pedestrian Safety WG 2001　Report".

12.　Pedestrian Safety Information from member countries

12.1　EEVC/WG17, EU/DG Enterprise (Mr. Janssen)

A discussion of the ACEA, EEVC and European Commission was held in April.　At present, periodical meetings are held once every two weeks in response to proposal by ACEA. The EC/DG Enterprise submitted a request to the Joint Research Center in Italy for investigation of the EEVC/WG17 proposal, the ACEA proposal and proposals which can be implemented within five years. Response will be given by the end of September.

12.2　NHTSA (Mr. Saul)

PCDS analysis is currently in progress.

12.3　Australia (Mr. McLean)

Australia began testing on pedestrians in NCAP by the European format.

12.4　Japan (Mr. Sasaki)

Investigations have begun on pedestrian safety tests, which are scheduled to be added to J-NCAP in the near future.
JMOT has begun investigation on regulations for pedestrian protection.

13.　Others

Next meeting: To be held in Adelaide, Australia in the week of February 5, 2001.
Mr. Mizuno thanked all members for attending and adjourned the meeting at noon.

Appendix 1

Agreements at the 7th Experts Meeting of IHRA/PS

HEAD FORM MASS

(1) "ADULT"
Mass of 4.5 kg, pending review of computer simulation

(2) UPDATE DOCUMENT PS/110 (ADULT + CHILD)
to include IHRA headform specifications
mass moment of inertia
(a) mass moment of inertia
(b) center of gravity
(c) accelerometer location
(d) seismic mass location tolerance
(e) assembly resonant frequency

(3) COMPUTER SIMULATIONS
(a) compare input data afterwards
(b) show validation level of pedestrian model
(c) start with 50th percentile adult male

CAR SPEED

combine global data for AIS 2+, 3+, 4+(head) against car speed

IMPACT CONDITIONS

(1) at least 3 vehicle shape categories based on computer simulation
(2) combination into single set if appropriate
(3) computer simulation included in procedure

CRITERIA & THRESHOLD

adult head – HIC_{15} = 1000
— HIC_{15} = 700? ; will ask IHRA/BIO for recommendation and explanation

DEFINITION OF SIDE REFERENCE LINE

(1) for bonnet, keep as per EEVC-17
(2) need new definition/procedure for windscreen and A-pillar
(3) ACEA, AAM, JAMA to propose windscreen and A-pillar procedure

CHILD

(1) age distribution AIS 2+, 3+, 4+ for children < 16 yr
(2) support for choice 6 yr?

CHILD

(1) size : diameter = 165mm (same as adult)

(2) mass = 3.5kg, pending review of computer simulation

HYB III	6-month	: 2.11kg
	12-month	: 2.49kg
	18-month	: 2.72kg
	3-year	: 3.05kg
	6-year	: 3.48kg
HYB III	50%	: 4.5kg
	5%	: 3.67kg
HYB III	5% female	: 3.67kg

Attendees at IHRA Pedestrian Safety WG 7h Meeting, September 25-28, 2000 **Appendix 2**

Name	Organization	Address	Tel	Fax	E-mail
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